Development and Implementation of Coastal AIS Network Concepts, with MTS Implications

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ABSTRACT:
It has long been realized that an automatic reporting device (transponder) fitted on a ship/aeroplane (mobile station), could be beneficial to the safety of navigation and the control and monitoring of the maritime environment. An automatic reporting system called the Automatic Identification System (AIS) has been adopted by IMO as carriage requirement for ships sailing under the SOLAS regulations. Domestic requirements for other vessels such as tugs, fishing vessels, pilot boats etc. will be seen on several places world wide.
In order to utilize the AIS functionality in a broader range for shore applications a shore-based infrastructure has to be established. A shore based network solution has a great deal to offer various groups of users such as maritime authorities, port authorities, shipping offices etc. The AIS eases the communications workload on all parties due to automatic and continuous transmission of ships position, static, and voyage related data and by providing means to send/receive text and binary messages. Operators and watch keeping officers can focus on operational and logistical issues, as they don't need to focus on communications, which are handled digitally in an unambiguous fashion. The digital data link for ship to shore and shore to ship enables real-time monitoring and messaging between mobile stations and shore applications. The shore based network infrastructure enables distribution of information in a very cost-effective manner to mobile stations moving in coastal area, by using the functionality of the AIS-transponder system. This information can consist of re-broadcast of position reports, navigational data, weather reports, real-time hydrographical data, DGNSS corrections and port information. The authorities could also by means of the shore infrastructure provide fleet and port management services to shipping and transportation agencies by using the precise information existing in the system.
In order to be able to perform these activities efficient over a broader area a shore-based infrastructure must exist, which can take care of the communication needs between shore and ship-based users. Saab TransponderTech (STT) has since 1998 developed solutions for a shore-based network that meets the various demands for a network infrastructure consisting of multiple shore users. This paper addresses shore based AIS network implementations and as an example shows the implementations in the Baltic Sea area.